PROCESS KNOWLEDGE EVALUATION FORM

Non-Routine Waste: Radioactive Waste

PKE Number: _____

Waste Stream Number (To be filled in by RCA): _____

Add when known: WDR #(s) / Parcel Card #(s): _____

Section I: To be completed by generator

General Information:

1. Building and room of waste generation: _____ ❒ See attached spreadsheet
2. Description of waste, include serial #'s for equipment, LLNL ID #'s for sealed sources: (Example: Kimwipes, glass beakers, plastic bags, rubber gloves, glovebox made of stainless steel & poly, 5 gallon metal container which last contained uranium bars): ❒ See attached requisitions
   ❒ See attached spreadsheet (a spreadsheet may be used for multiple items)

   _____

   _____

   _____
3. Estimated weight of material per item or parcel (Example: Lab trash parcel - 30 pounds; glovebox - 100 pounds; 3 wood boxes - 25 pounds each): ❒ See attached spreadsheet

   _____
4. Describe process / activity that generated the waste or operational use for equipment (Example: Decon on glovebox that was used to digest rock samples): _____

   _____

   _____

   _____
5. Procedures used when generating the waste or involved in the use of the equipment: _____

   _____

Item 6 is for equipment: ❒ Not Applicable

6. The following documentation is attached (Provide the following supporting information, if available):
   ❒ Procurement Documentation, ❒ Statement of Work, ❒ Drawings, ❒ Specifications

Items 8 - 9 are for sealed sources only: ❒ Not Applicable

7. Source verification documentation for each sealed source: (check the ones that are attached) ❒ Materials Management sealed source inventory printout; ❒ Copy of the NIST Certification for the source; ❒ Photographs; ❒ A memo describing how the identity of the source was determined and verified; ❒ Gamma Spec.
8. Are the sources shielded? ❒ Yes ❒ No ❒ Some are (list which sources are shielded)_____

   _____

   a. Is the source lead shielded? ❒ Yes ❒ No

   _____
9. Is the source leaking? ❒ Yes ❒ No, If yes, explain additional packaging requirements.

   _____

Items 10-11 are for classified waste only: ❒ Not Applicable

10. List the drawing #s and LLNL Inventory #s of the waste items: _____

❒ See attached spreadsheet

11. Classification is due to ❒ Shape, ❒ Composition, ❒ Other: _____
Level of classification (e.g., SRD, CRD): _____
Location of supporting information: _____
Special instructions to protect classified information: _____

Waste Evaluation:

12. Does the waste contain any of the following:
Verified by: *VI=Visual Inspection; S&A=Sampling and Analysis; PK=Process Knowledge,* ***When PK is checked, it must be supported by Visual Inspection (VI) or an explanation must be documented. (Example: Inventory controls, none used in process, or reference supporting documentation, if not already described above, (e.g., logbooks, drawings).***

a. Hazardous residues ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
If yes, what are the residues _____

b. Residual Liquids ❒ Yes ❒ No ❒ VI ❒ PK _____
If yes,
for NTS, is it ≤ 0.5% by volume of processed liquids in the waste container? ❒ Yes ❒ No ❒ N/A
for NTS, is it ≤ 1.0% by volume of residual liquids in well-drained containers in the waste container?
❒ Yes ❒ No ❒ N/A
for WIPP, is it ≤ 2 liters of residual liquids in well-drained containers in a 208 liter drum?
❒ Yes ❒ No ❒ N/A
for WIPP, is it ≤ 8 liters of residual liquids in well-drained containers in a SWB?
❒ Yes ❒ No ❒ N/A
What is the liquid? _____

c. For NTS only: Particulates [> 1% by weight of < 10-micrometer diameter (flour) or > 15% by weight of < 200-micrometer diameter (sand)] ❒ Yes ❒ No ❒ N/A ❒ VI ❒ S&A ❒ PK _____

d. Compressed gases ❒ Yes ❒ No ❒ VI ❒ PK _____

e. Etiological agents ❒ Yes ❒ No ❒ S&A ❒ PK _____

f. Chelating agents ❒ Yes ❒ No ❒ S&A ❒ PK _____
If yes, is the concentration less than 1% by weight? ❒ Yes ❒ No

g. PCBs (capacitors, etc.) ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____

h. Explosives ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____

i. Pyrophorics ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____

j. Asbestos ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
If yes, is it ❒ friable ❒ non-friable. If friable, please segregate.

k. Batteries ❒ Yes ❒ No ❒ VI ❒ PK _____

When Sampling and Analysis is used, attach results.

Radiological Characterization: ***There must be information available to support the below information. All determinations must be reproducible.***

13. List the radionuclides and contamination level present in the waste: ❒ See attached sheet,
❒ Activity is noted on the parcel card or WDR

Radionuclide	Radionuclide	Radionuclide	Radionuclide	Radionuclide	Radionuclide

For equipment: How much fixed contamination? _____
How much non-fixed (removeable) contamination? _____
What is the surface area of the equipment? _____ ❒ See attached memo

14. Determination of radionuclides:

❒ Process Knowledge: Explain: (Example: Inventory Controls) _____

_____

❒ Radioanalysis (attach results) ❒ Radiological swipe (attach results)

❒ Gamma Spectroscopy (attach results) ❒ Alpha Spectroscopy (attach results)

15. Determination of Activity: ***Except for AVLIS Method, documentation must be attached describing all calculations and assumptions used to obtain the activity values.***

❒ Gamma Spectroscopy ❒ Alpha Spectroscopy

❒ Mass Balance ❒ Mass to Curie Conversion

❒ High Sensitivity Neutron Instrument ❒ Tritium Off Gas Measurement

❒ AVLIS Method ❒ Other (describe methodology) _____

❒ Liquid Scintillation _____

List procedure(s) followed: _____

❒ DPM or CPM to Curie Survey: Instrument _____ Probe _____

Attach memo describing methodology used.

I certify that the waste characterization information provided on this form is complete and accurate. I have obtained this information by:

❒ Direct knowledge of the waste generating process

❒ Obtaining sufficient information from others who are knowledgeable of the waste generating process

Generator (please print) _____ extension _____

Signature _____ Date _____

Section IA. HWM REVIEW AND VALIDATION

1. The waste matches the description above. ❒ Yes ❒ No
2. Section I is complete. ❒ Yes ❒ No

_____

Completed by: Print Signature Date

Section II. ENVIRONMENTAL ANALYST REVIEW

When the generator is using process knowledge to characterize his waste the EA should review the supporting documentation. If no documentation is reviewed, explain why, (e.g., visually examined the waste, documented any interviews with the generator).

1. Based on the information provided on this PKE Form, the waste is free of regulated hazardous materials. ❒ Yes ❒ No
2. List the documentation that was reviewed to support the characterization of this waste stream.

_____

_____

❒ See attached list of additional support documentation that was reviewed.

❒ Waste characterization memo attached.

❒ No documentation was reviewed: Explain why: _____

_____

_____

EA: Print Signature Date

Section III. RADIOLOGICAL REVIEW

1. Based on the information provided on this PKE Form, the waste has been properly characterized as to its radiological content. ❒ Yes ❒ No ❒ See attached memo for additional information.

Review performed by: ❒ RCA ❒ Health Physicist

Performed by: Print Signature Date

Section IV. RCA REVIEW

General Review:

1. Sections I, II, and III are complete.
2. Inspection / surveillance conducted: ❒ Yes ❒ Surveillance Number: _____ or
   ❒ Visual Inspection (Waste matches the description identified in Section I)

TRUW Radiological Characterization:

1. The radionuclides described above have been identified and quantified as required by the TRUW Characterization QAPP and the LLNL TRUW Characerization QAPjP by:
   ❒ radioassay ❒ acceptable knowledge.
2. Documentation of radioassay or acceptable knowledge is attached. ❒ Yes

I have reviewed the content of this PKE package and find it acceptable.

RCA: Print Signature Date

Section V. WASTE CERTIFICATION OFFICIAL REVIEW

1. The waste is acceptable to be packaged for shipment to ❒ NTS ❒ Hanford ❒ Envirocare ❒ WIPP.
2. Package the waste in accordance with:
   ❒ Packaging Instructions Number: _____
   ❒ Facility-Specific Handling and Packaging Procedure: _____

WCO: Print Signature Date